

REMARKS

By the present amendment and response, independent claims 24, 31, and 37 have been amended to overcome the Examiner's objections. Claims 24-26 and 28-48 are pending in the present application. Reconsideration and allowance of pending claims 24-26 and 28-48 in view of the following remarks are requested.

The Examiner has rejected claims 24-26 and 28-48 under 35 USC §103(a) as being unpatentable over U.S. patent number 6,069,397 to Cornett et al. ("Cornett") in view of U.S. patent number 5,446,311 to Ewen et al. ("Ewen"). For the reasons discussed below, Applicant respectfully submits that the present invention, as defined by amended independent claims 24, 31, and 37, is patentably distinguishable over Cornett and Ewen, singly or in combination thereof.

The present invention, as defined by amended independent claims 24 and 37, respectively, teaches, among other things, a conductor or inductor patterned in a "second area" of a dielectric, where a permeability conversion material is interspersed within the second area of the dielectric such that the permeability of the second area of the dielectric is higher than the permeability of a "first area" of the dielectric, and where the first area of dielectric is not situated underneath the conductor or inductor and the second area of the dielectric is not situated over the conductor or inductor. As disclosed in the present application, the permeability conversion material is interspersed within the second area of the dielectric such that the permeability of the second area of the dielectric is increased, while a mask prevents the permeability conversion material from entering the first area of

the dielectric, which is situated adjacent to the second area of the dielectric. As a result, the permeability of the second area of the dielectric is higher than the first area of the same dielectric.

Thus, by increasing the permeability of an area of a dielectric by interspersing permeability conversion material within the dielectric area and masking another adjacent area of the dielectric so as to prevent the permeability conversion material from entering that area, the present invention achieves control over the particular area of the dielectric in which the permeability conversion material is dispersed. For example, the permeability conversion material may be dispersed only in an area of the dielectric that includes an inductor, and not in a neighboring dielectric area of the same dielectric layer. Thus, the present invention advantageously allows a choice of increasing the permeability of an area of a dielectric after fabrication of an inductor in that area of the dielectric, while masking an adjacent area of the dielectric such that the permeability of the adjacent area of the dielectric is not increased.

Additionally, by interspersing the permeability conversion material within the second area of the dielectric, the amount of permeability conversion material can be advantageously controlled to achieve a desired increase in the permeability of the second area of the dielectric after patterning of an inductor in the second area of the dielectric. For example, a small amount of very high permeability material, such as a nickel-iron alloy, interspersed within the second area of the dielectric can result in a significant increase in the permeability of the second area of the dielectric.

In contrast, Cornett does not teach, disclose, or suggest a permeability conversion material interspersed within a second area of a dielectric including an inductor or conductor, such that the permeability of the second area of the dielectric is higher than the permeability of a first area of the dielectric, where the first area of dielectric is not situated underneath the conductor or inductor and the second area of the dielectric is not situated over the conductor or inductor. Cornett specifically discloses inductor layer 220 including patterned conductive trace 110, which is embedded within magnetic material layers 221 and 223. See, for example, column 2, lines 18-21 and Figure 2 of Cornett. In Cornett, inductor layer 220 is formed on passivation layer 217, which is a dielectric layer. Thus, in Cornett, passivation layer 217, i.e. a dielectric layer, is situated underneath patterned conductive trace 110. Additionally, magnetic material layer 223, which comprises an insulative magnetic material, is situated over patterned conductive trace 110. Furthermore, Cornett fails to teach, disclose, or suggest a first area of a dielectric including a conductor or inductor, where permeability of a second area of the dielectric is higher than the permeability of the first area of the dielectric, and where the first area of dielectric is not situated underneath the conductor or inductor and the second area of the dielectric is not situated over the conductor or inductor.

In contrast to the present invention as defined by amended independent claims 24 and 37, Ewen does not teach, disclose, or suggest a permeability conversion material that is “interspersed” within a second area of a dielectric including an inductor or conductor, such that the permeability of the second area of the dielectric is higher than the

permeability of a first area of the dielectric, where the first area of dielectric is not situated underneath the conductor or inductor and the second area of the dielectric is not situated over the conductor or inductor. Ewen is cited by the Examiner to teach an artisan that it is conventional to form a passivation/dielectric layer comprising silicon oxide. However, Ewen fails to overcome the deficiencies of Cornett as discussed above. Furthermore, Ewen fails to teach, disclose, or suggest a first area of a dielectric including a conductor or inductor, where permeability of a second area of the dielectric is higher than the permeability of the first area of the dielectric, and where the first area of dielectric is not situated underneath the conductor or inductor and the second area of the dielectric is not situated over the conductor or inductor.

For the foregoing reasons, Applicant respectfully submits that the present invention as defined by amended independent claims 24 and 37 is not suggested, disclosed, or taught by Cornett, either singly, or in combination with Ewen. Thus, amended independent claims 24 and 37 are patentably distinguishable over Cornett and Ewen. As such, claims 25, 26 and 28-30 depending from amended independent claim 24 and claims 38-48 depending from amended independent claim 37 are, *a fortiori*, also patentably distinguishable over Cornett and Ewen for at least the reasons presented above and also for additional limitations contained in each dependent claim.

The present invention, as defined by amended independent claim 31, teaches, among other things, an inductor patterned in a dielectric having a first permeability and a permeability conversion material having a second permeability interspersed within the

dielectric, where the second permeability is greater than the first permeability, and where the dielectric is not situated over the inductor. Thus, as discussed above, the permeability conversion material is interspersed within the dielectric to increase the permeability of the dielectric. The fact that a permeability conversion material is interspersed within a dielectric, where the permeability of the permeability conversion material is greater than the permeability of the dielectric, where the inductor is patterned in the dielectric prior to the dielectric receiving interspersed permeability conversion material, and where the dielectric is not situated over the inductor, results in the various advantages discussed above.

As such, and based on the foregoing reasons in relation to amended independent claims 24 and 37, amended independent claim 31 is also patentably distinguishable over Cornett and Ewen, either singly or in combination. Thus, claims 32-36 depending from amended independent claim 31 are also patentably distinguishable over Cornett and Ewen for at least the reasons presented above and also for additional limitations contained in each dependent claim.

Based on the foregoing reasons, the present invention, as defined by amended independent claims 24, 31, and 37 and claims depending therefrom, is patentably distinguishable over the art cited by the Examiner. Thus, claims 24-26 and 28-48 pending in the present application are patentably distinguishable over the art cited by the Examiner. As such, and for all the foregoing reasons, an early allowance of claims 24-26 and 28-48 pending in the present application are respectfully requested.

Respectfully Submitted,
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Date: 10/13/03


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